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Preparation of Pineapple Jam Blended With Carrot

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Abstract
In recent years, the light has focused on processed foods rich in nutritional and functional properties. From this point of view, the consumer's trend has shifted to foods with more natural, dietary fibres, natural colorants, minerals, vitamins, low calories, low cholesterol, and low fat and free of synthetic additives. The present investigation was made with an attempt to develop pineapple jam by partial addition of different level of carrot pulp. This value added nutrient rich jam with functional properties will impart endless nutrient benefits to consumer with hiked beta-carotene levels. For control, jam was standardized to 100% pineapple pulp, 75% sugar, 1% citric acid as per the prescribed standards for jam by FSSAI, 2011; and treatment T_1 was standardized to 90% pineapple pulp, 10% carrot pulp, T_2 was standardized to 80% pineapple pulp, 20% carrot pulp & T_3 was standardized to 70% pineapple pulp, 30% carrot pulp whereas the concentration of sugar and citric acid was kept constant throughout the treatments. The chemical analysis for prepared jam samples from different treatments and control was performed as: Moisture, Reducing Sugars, Total Soluble Solids (TSS), Acidity, Ascorbic Acid, Ash, and pH; for estimating its nutritional content and safety. Also, Organoleptic characteristics like (Flavour and Taste, Body and Texture, Colour and Appearance) were scrutinised by trained panellists using 9-points Hedonic Scale. The treatment T_3, containing 30% carrot pulp scored the highest acceptability. Thus, as for as product acceptability judged by Organoleptic evaluation and therapeutic value is concern, the treatment can be rated as $T_3>T_2>T_1>T_0$.

Keywords: Pineapple, carrot, blended jam

1. Introduction
According to FPO, 1955 Jams are solid gels made from fruit pulp, sugar and added pectin. They can be made from single fruits or a combination of fruits. The fruit content should be at least 40%. In mixed fruit jams the first-named fruit should be at least 50% of the total fruit added. The total soluble solid of jam should not be less than 68%.Jams are most popular fruit preserves (or) conserve is the product prepared from whole fruit, pieces of fruit, fruit pulp or fruit puree and with or without fruit juice or concentrated. Fruit juice as optimal ingredients and mixed with carbohydrate sweetener, with (or) without water and processed to a suitable consistency" (Ranganna, 1977). Underutilized fruits can be preserved in these forms so that the consumption of these fruits can be improved. Pineapple (*Ananas comosus),* a tropical plant with edible multiple fruit, is the most economically important plant belonging to Bromeliaceae family. Pineapple is mainly valued for its pleasant taste and flavor. Pineapple fruit is a good source of Bromelain, a digestive enzyme with biological functions i.e., a non toxic compound have a number of potential therapeutic applications, including treatment of trauma, inflammation, autoimmune diseases, enhancement of immune response, and malignant disorders (Maurer, 2001 and Orsini, 2006) [6, 8]. Carrot (Daucus carota L) is one of the popular root vegetables grown throughout the world and is the most important source of dietary carotenoids in Western countries including the United States of America Block (1994) [2]; Torronen *et al.,* (1996) [[10]. Halliwell B, (1996) [4] reported that the defensive effects of natural antioxidants in fruit and vegetables are related to three major groups; vitamin, phenolics and carotenoids. Ascorbic acid and phenolics are known as hydrophilic antioxidants, while carotenoids are known as lipophilic antioxidants. Carrots, a good source of carotene, are usually used either fresh or processed into juices, beverages, jams, baby foods and fiber products Lombrana and Dias, (1985) [5]. The amazing benefits of carotenes, including its conversion in the body into vitamin A and the unique biological effects of carotenes as antioxidant activity, stimulation of the immune response and reducing the risk of cancer Olson, (1988) [7] and Benoist *et al*., (2001) [3], The present investigation has been conducted to study the preparation of pineapple jam blended with carrot and to study the effect of carrot blends on the chemical and sensory attributes of the jam.

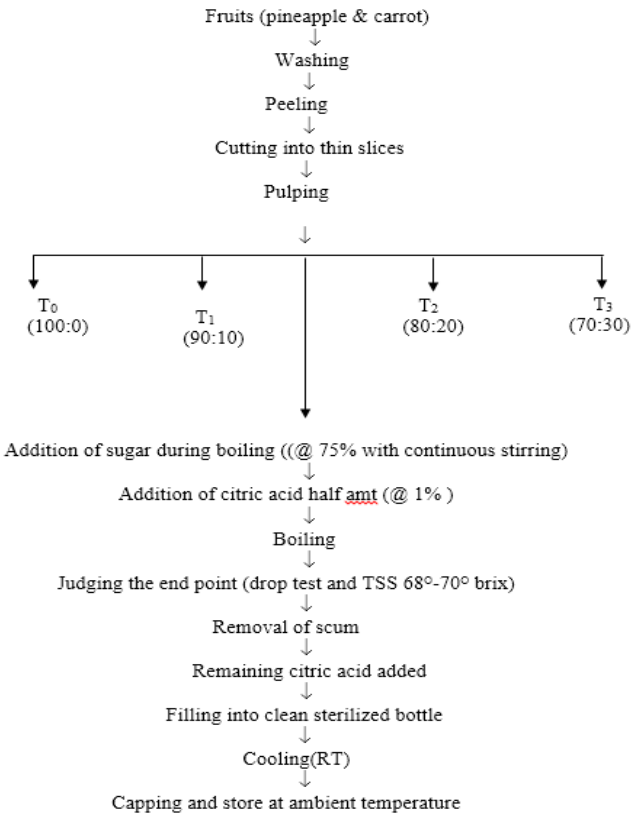
2. Materials and Methods

The fully matured freshly harvested pineapple and carrot were procured from the local market of Allahabad were brought to the Warner school of food and dairy technology.

2.1 Treatment combination

Treatment	Pineapple (%)	Carrot (%)	Sugar	Citric Acid
T_0	100	0	75%	1%
T_1	90	10	75%	1%
T_2	80	20	75%	1%
T_3	70	30	75%	1%

Flow Chart for Jam Preparation



3. Results and Discussion

The chemical analysis of jam was carried out by evaluation of different chemical properties, such as:

Titrable acidity: took one g blended jam and dissolve it in 20 mL distilled water, add two to three drops of phenoptheline indicator then titrate it with 0.1 N NaOH till pink colour appears. Titrable acidity can be calculated as in Equation (1).

$$T_a = \frac{B \times 0.1 \times 0.064 \times 100}{W} \quad (1)$$

Where, *Ta* is titrable acidity; *B* is reading burette; *W* is weight of sample.

pH value: The pH value of the sample was measured with a digital glass electrode pH meter (CD 175 E) at room temperature, which was calibrated prior to sample pH measurement using buffer solutions of pH value 4.0 and 7.0 (Ranganna, 1999).

Total soluble solid: total soluble solid of blended jam was determined by digital refractometer.

Determination of sugars: determination of sugars (total sugars, reducing sugar and non-reducing sugar) was carried out through Lane and Eynon Method as was described by James (1995) Total sugar and reducing sugar: We took 5 g of sample into a beaker and added 100 mL of warm water. The solution was stirred until all the soluble matters were dissolved and filtered through wattman paper into a 250 volumetric flask Pipetted

100 mL of the solution prepared into a conical flask, added 10 mL dilued HCL and boiled for 5 min. On cooling, neutralize the solution to phenolphthalein with 10% NaOH and make up to volume in a 250 volumetric flask. This solution was used for titration against Fehling's solution and reading was calculated *Equations (2) and (3).*

$$T_t = \frac{4.95 \times 250 \times 2.5 \times 100\%}{T \times W \times 10} \quad (2)$$

$$R_S = \frac{T \times W \times 10 \times 100\%}{4.95 \times 250} \quad (3)$$

where, *Tt* is total sugar, %; *T* is titre; *Rs* is reducing sugar,%.

Non-reducing sugar was estimated as the difference between the total sugar content and reducing sugar content.

Ascorbic acid: Ascorbic acid is an important constituent of fruits and vegetables. It is a reducing agent, and is determined by its reaction with 2, 6- dichlorophenol indophenol. The dye which is blue in alkaline solution and red in the acidic solution is reduced to colourless form. Took 10-20 mL of fruit juice or 10 g of solid food and blend it with 3% HPO3 to make the total volume of 100 mL, filter or centrifuge this material. The ascorbic acid can be calculated as Equation (4).

$$A_a = \frac{T_r \times D_f \times V_m \times V_s \times 100\%}{V_e \times W_t} \quad (4)$$

where, *Aa* is ascorbic acid; *Tr* is titer; *Df* is dye factor; *Vm* is volume of solution made; *Vs* is volume of sample; *Ve* is volume of extract; *Wt* is weight of sample taken.

Total ash: was determined according to A. O. A. C. (1975). 5 gm sample was weighed into crucible and ignited at law flame till ant the material was completely charred. That was kept in muffle furnace for 6 hrs at 600C and further cooled in desiccators and weighted. This was repeated till two consecutive weights were constant and per cent ash was calculated.

$$\text{Ash \% by mass} = 100\frac{(M_2 - M)}{(M_1 - M)}$$

Where, M_2= weight of crucible with ash, M = weight of empty crucible M_1= weight of crucible with sample.

β-carotene: content was determined using the method described by Wongo (2005) [11] with minor modifications. Two millimeters of jam sample was mixed with 10 ml of acetone (Park Scientific Limited, Northampton, UK) and transferred to 100 ml volumetric flask. The prepared mixture was filtered using a filter paper (whatman No. 1). The residue was again mixed with 10 ml of acetone and extracted as described above. The extract (25 ml) was evaporated to dryness on a rotary evaporator (Heidolph-Heizbad HB digit, Germany). Dried extract was dissolved in 1 ml of petroleum

ether (Qualikems Fine Chemicals, New Delhi, India) and the solution purified using a chromatographic column (silica gel 60; length 10 cm; diameter 1 cm). The column was eluted with about 25 ml of petroleum either and elute was collected in a flask. Two milliliters of elute was transferred into a cuvette and absorbance read using a spectrophotometer (M501 Single beam scanning UV/vis spectrophotometer: Camspec, Cambridge, UK) at 440 nm. Concentration of β-carotene was calculated using the standard curve data as follows;

mg of β-carotene per 100 g = μg of β-carotene per 100g as read from the

$$\frac{\text{Standard curve x dilution factor x 100}}{\text{Volume of sample (ml) x 100}}$$

Sensory evaluation: sensory evaluation on the basis of 9-point hedonic scale of all the prepared blended jam was done by taste panel. The tasting panel was consisting of 10 members. They were asked to evaluate the color, flavor, consistency, taste and overall acceptability by a scoring rate, 9 means like extremely, 8 means like very *m*uch, 7 means like moderately, 6 means like slightly, 5 means neither like nor dislike, 4 means dislike slightly, 3 means dislike moderately, 2 means dislike very much and 1 means dislike extremely. The different preferences as indicated by scores were evaluated by statistical methods.

3.1 Effect of pineapple and carrot on TSS, Titratable acidity, pH value, reducing sugar, ascorbic acid, ash, moisture and beta-carotene content of blended jamA

Parameters	Treatments			
	T_0	T_1	T_2	T_3
1. Chemical analysis (in percent)				
β-carotene(μg)	0.32	0.66	0.68	0.73
TSS (^{O}brix)	68.84	68.90	68.86	68.80
Acidity %	0.18	0.14	0.11	0.09
Ascorbic acid (mg)	15.90	13.50	11.52	11.58
Moisture %	29.74	29.68	29.70	29.64
Ash %	0.46	0.47	0.47	0.48
pH	3.15	3.24	3.26	3.32
Reducing sugar %	20.82	20.83	20.84	20.87
2. Organoleptic scores (9 point hedonic scale)				
Color& appearance	7.34	7.54	7.70	7.44
Body & texture	7.54	7.58	7.60	7.62
Flavour& taste	7.20	7.68	7.50	7.68
Over all acceptability	7.56	7.66	7.76	7.84

4. Conclusion

The study sought to find out with precision, the organoleptic acceptance of the prepared blended jam samples with different treatments in terms of body and texture, color and appearance, flavour and taste and overall acceptability. However, T_3 (70:30) was the most liked jam treatment with highest score for nearly all the evaluating parameters. With the addition of carrot the beta-carotene content was increased in jam and high amount of beta-carotene was found in T_3 (70:30) sample.

5. References

1. AOAC International 2007. Official methods of analysis, 18th edn. 2005; current through evision 2, 2007. Method 967.12. AOAC International, Gaithersburg, MD, USA.
2. Block G (1994) Nutrient source of pro-vitamin A carotenoids in American diet. Am J Epidemiol 139:290–293.
3. Benoist, B.; Martines, J. and Goodman, T. "Vitamin A Supplementation and the Control of Vitamin A Deficiencies: Conclusions." *Food Nutr. Bull.,* Vol. 22, No. 3, (2001), 335-337.
4. Halliwell, B. (1996). Antioxidants in human health and disease. Annual Review of Nutrition. 16,33-50.
5. Lombrana, J.I. and Dias, I.M. "Rheological and Chemical Changes in Stored Carrot Juice." *Canadian Instit. Food Sci. Technol.,* Vol. 18, No. 3, (1985), 213-219.
6. Maurer HR (2001). Bromelainbiochemistry pharmacology and medical use. *Cellular and Molecular Life Sciences* 58(9) 1234-1245
7. Olson, J.A. "Biological Actions of Carotenoids." Presented at the *Annual Meeting of the Federation of American Societies for Experimental Biology,* Las Vegas, NV, (May 2, 1988).
8. Orsini Roger A (2006). Bromelain. *Plastic and Reconstructive Surgery* 118(7) 1640-1644.
9. Ranganna, S. (1986). Handbook of analysis and quality control for fruit and vegetable products. Tata McGraw Hill Publishing Company, New Delhi: 623-624.
10. Torronen R, Lehmusaho M, Hakkinen S, Hanninen O, Mykkanen H (1996) Serum β-carotene response to supplementation with raw carrots, carrot juice or purified β-carotene in healthy nonsmoking women. Nutr Res 16:565–575
11. Wongo, L. L. (2005). Laboratory manual in Food Science and Technology, 2nd edn. Department of Food Science and Technology, Jomo Kenyatta University of Agriculture and Technology – Kenya. p. 23-26